APPENDIX D

GUIDANCE FOR SELECTION OF FOUNDATION MATERIAL CLASSES IN TABLE 1804.3

D-101.0 Purpose: The purpose of Appendix D is to provide guidance for the selection of the material class and consistency in place when using Table 1804.3.

D-102.0 Application: Appendix D is provided only as a general guide to engineering judgment. All available data should be evaluated and professional engineering judgment exercised in selection of the appropriate material classification for use with Table 1804.3. The references on soil and rock classification and typical ranges of index properties provided in this appendix should not be considered to be code requirements.

D-103.0 Classification of Soil: Guidelines for generally accepted engineering practice in the description and classification of soils are provided in ASTM D2488-84 Description and identification of Soils (Visual-Manual Procedure) and ASTM D2487-85 Classification of Soils for Engineering Purposes.

D-104.0 Classification of Rock: Guidelines for generally accepted engineering practice in the description and classification of rocks are provided in Chapter 1 of Design Manual 7.1 - Soil Mechanics, Naval Facilities Engineering Command, May 1982 (NAVFAC DM-7.1)

D-105.0 Typical Index Properties: Typical ranges of index properties for the Material Classes listed in Table 1804.3 are provided in Table D-1.

TABLE D-1
TYPICAL RANGE OF INDEX PROPERTIES

Material Class	Description	Consistency in Place	Rock Quality Designation (RQD%)	Unconfined Compressive Strength (PSF)	Standard Penetration Resistance (Blows/Foot)
1a	Massive bedrock - granite, diorite, gabbro, basalt, gneiss,	Hard rock, minor jointing	>75	>8000	-
1b	quartzite, well-cemented conglomerate	Hard sound rock, moderate jointing	50 to 75		
2	Folliated bedrock	Medium hard rock minor jointing	>50	>8000	-
3	Sedimentary bedrock-cementation shale, silt-stone, sandstone, limestone, dolomite, conglomerate	Soft rock, moderate jointing	>50		-
4	Weakly cemented sedimentary bedrock - compaction shale or other similar rock in sound condition	Very soft rock	<50		
5	Weathered bedrock - any of the above except shale	Very soft rock. weathered and/or major jointing and fracturing	<50		-
6	Slightly cemented sand and/or gravel, glacial till (basal or lodgement), haropan	Very dense	-		>50
7	Gravel, widely graded sand and gravel, and granular abiation till	Very dense Dense Medium dense	-		>50 41-50 16-40

		Loose Very loose			8-15 <8
8	Sands and non-plastic silty sands with little or no gravel (except for Class 9 materials	Dense Medium dense Loose Very loose	-		>30 11-30 6-10 <6
9	Fine sand, silty sand and non-plastic inorganic silt	Dense Medium dense loose Very loose	-		>30 11-30 6-10 <6
10	Inorganic sandy or silty clay, clayey sand, clayey slit, clay or varved clay low to high plasticity	Hard Stiff Medium Soft	-		>20 9-20 4-8 <4
11	Organic soils - peat organic silt, organic clay	-	-		-

Notes to table D-1

Note 1: For discussion of RQD values see Deere, D.U., Rock Mechanics in Engineering Practice (Chapter 1), Stagg and Zinkiewicz, Eds., 1968, John Wiley and Sons, Inc.

Note 2: For determination of Unconfined Compressive Strength see ASTM D2938.

Note 3:For determination of Standard Penetration Resistance N-value see ASTM D1586. The presence of large particles (coarse gravel, cobbies, boulders) may cause N-values to be unrealistically high. Such values should not be used. Also standard penetration resistance should not be used over depths less than five feet.